APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/043,696	01/11/2002	Carolyn Zelek	FMC 1361 PUSP / 201-0240	7703

			EXAMINER
28395	7590	07/21/2006	KRISCIUNAS, LINDA MARY

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ART UNIT	PAPER NUMBER
3623	

DATE MAILED: 07/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/043,696	ZELEK ET AL.
	Examiner	Art Unit
	Linda Krisciunas	3623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   The following is a Non-Final Office Action in response to the applicant's

amendments filed June 19, 2006. Claims 1-21 are pending.

Response to Amendment

2.   The Examiner withdraws the objection to claim 10 due to the claim

amendment.

Response to Arguments

3.   The Examiner has reviewed the applicant's arguments with regard to the

Bovarnick et al (US 6,704,015) reference and they were deemed persuasive. A

new Non-Final art rejection has been made below.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

5.   Claims 1-6, 8-12, and 14-21 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Bovarnick et al (US 6,704,015) in view of Sugino et al (US

5,287,284).

As per claims 1 and 14, Bovarnick teaches identifying at least one aspect

of a product that is critical to customer satisfaction and a target value for at least

one aspect (column 4, lines 1-21, where sales is one listed critical criteria for

customer satisfaction and as per Figure 1B has values of either low, medium or

high impact associated with it.). Bovarnick does not explicitly teach control

factors or adjusting nominal design values. Sugino teaches that it is known to

characterize the at least one aspect in terms of at least one contributing factor,

and characterizing the at least one contributing factor in terms of at least one

control factor (column 6, lines 44-59, where the contributing factor is chip position

and the control factor is the analysis execution controller which controls the

position of the chip pad position where the design parameters are changed to

optimize the position.) Sugino teaches adjusting nominal design values for the at

least one control factor such that variability in the at least one contributing factor

is minimized and the target value for the at least one aspect is attained (column

7, lines 63-67: A normalization is executed so that analysis results fall within the

range of a specific value. For instance, 1 being best case and 0 being worst

case.). Sugino is an analogous art as it also teaches about quality control

systems of products. Therefore it would have been obvious to one of ordinary

skill in the art at the time of the invention to modify the quality system of Bovarnik

with a control factor feature and nominal design value adjust feature of Sugino to

provide means for determining the value of the critical product feature and means

for targeting the value the process is capable of producing product thereby

providing for a more efficient manufacturing process.

As per claims 9 and 20, they recite the same limitations as claims 1 and

14 and are subject to the same art rejection(s). They also cite the additional

limitation: as of means for computing a mean and variability value for the

contributing factor based on the transfer function and the nominal design and

variability values for the at least one control factor (Sugino teaches mean values and variability values in Figure 7 where under the Normalization heading the graph on the far left depicts the chip pad position (x) and plots it with the mean value being where most of the product performs, which is represented by the top of the curved line and the variability is indicated by the spread of the line across the X axis. This line shows that a large majority of the product has the same chip position with various standard deviations from this mean value. This is a common statistical sampling plot.). Sugino is an analogous art as it also teaches about quality control systems of products. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the quality system of Bovarnik with a mean and variability value feature of Sugino to provide means for determining the capability of the process and thereby running more efficiently.

As per claims 2 and 16, Bovarnick does not explicitly teach y=f(x). Sugino teaches that it is known that at least one contributing factor is characterized in terms of the at least one control factor based on a transfer function y=f(x) (See Figure 8 where the defect ratio is plotted as a function of the degree of unbalance. This follows the y=f(x) formula.). Sugino is an analogous art as it also teaches about quality control systems of products. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the quality system of Bovarnik with a y=f(x) feature of Sugino to provide means for graphically depicting the relationship(s) between the control factor and the critical factor, which allows for a more user-friendly means of conveying the impact of the control factor.

As per claims 3 and 17, Bovarnick nor Sugino explicitly teach one contributing factor as additionally characterized in terms of at least one contributing noise factor and a transfer function $y=f(x,n)$. Official notice is taken that it is old and well known for noise to be a contributing factor to measurements values. One such example is displayed on page 47, first column, last paragraph of "Modeling, Optimization and control of spatial uniformity in manufacturing processes" by Guo et al, IEEE, February 1993. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the analysis system of Sugino with a noise factor feature to provide means for accurately depicting the range of values that the process is capable of manufacturing.

As per claim 4, Bovarnick teaches at least one aspect and target value for the at least one aspect are identified based on consumer insight (column 4, lines 59-62, where the items identified as critical to quality from the perspective of customer satisfaction with financial performance are illustrated in Figures 1D and 1E.).

As per claim 5, Bovarnick teaches identifying a target value for the at least one aspect in an aged condition (column 17, lines 48-65, where aged condition is interpreted as historical data and historical data is kept for a certain length of time and then purged.); and minimizing variability in the at least one contributing factor such that the target value for the at least one aspect in the aged condition is attained (column 28, lines 16-43, where the data that is measured is entered into

the system and there are control limits on the values and if these limits are

exceeded the data is corrected or the chart definition is changed).

As per claims 6, 12 and 18, Bovarnick does not explicitly teach minimizing

variability. Sugino teaches that it is known to minimize variability in the at least

one contributing factor by reducing variability in the at least one control factor

(See Figure 7: Optimization and See Figure 1B (126) where the design

parameters are optimized from a plurality of normalized analysis results by trade-

off evaluation unit (28). See also column 8, lines 30-39.). Sugino is an analogous

art as it also teaches about quality control systems of products. Therefore it

would have been obvious to one of ordinary skill in the art at the time of the

invention to modify the quality system of Bovarnik with variability minimization

feature of Sugino to provide means for reducing noise, or errors, in the data and

thereby producing a better product via a better process.

As per claims 8 and 19, Bovarnick teaches assessing the extent to which

the target value is attained over the product life (column 17, lines 47-51, where

historical data is maintained until it is not required and then it is purged. The

saving of historical data is equivalent to attaining values over the product life as it

performs an identical function in substantially the same manner with substantially

the same results.).

As per claims 10 and 21, they recite the same limitations as claims 1-3

and 9 and are therefore subject to the same art rejection(s).

As per claims 11 and 15, Bovarnick does not explicitly teach

reducing variability of the contributing factor via adjusting the input. Sugino

teaches that it is known that the variability in the contributing factor is reduced in response to input adjusting the nominal design value(s) for the at least one control factor (See Figure 7: Optimization and See Figure 1B (126) where the design parameters are optimized from a plurality of normalized analysis results by trade-off evaluation unit (28). See also column 8, lines 30-39, such that the inputted parameters of chip position depicted in column 6, lines 44-59 are optimized via the optimization process and thereby reduce variability of the data.). Sugino is an analogous art as it also teaches about quality control systems of products. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the quality system of Bovarnik with variability minimization feature of Sugino to provide means for reducing noise, or errors, in the data and thereby producing a better product via a better process.

6.   Claims 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bovarnick (US 6,704,015) in view of Sugino et al (US 5,287,284), in further view of Van Wyk et al (US 5,581,466).

As per claims 7 and 13, Bovarnick nor Sugino explicitly teach six sigma. Van Wyk teaches that it is known that the variability in the at least one contributing factor is reduced to a 6 sigma level (column 2, lines 28-41, where six sigma tolerances and analysis are calculated). Bovarnick and Sugino are combinable for the reasons set forth above. Further, Van Wyk is an analogous art as it also teaches about quality control and measurement. Therefore it would

have been obvious to one of ordinary skill in the art at the time of the invention to

modify the quality system of Bovarnick and Sugino with the six sigma feature of

Van Wyk to provide a more rigorous system for measurement.

Conclusion

7.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. The following also teaches about product design and

quality measurement: Abelow (US 5,999,908), Cram et al (US 5,963,953), Lee

(US 5,765,137), "Quantifying design and manufacturing robustness through

sstochastic optimization techniques" by Kazmer et al, Proceedings of the 1996

ASME Design Engineering Technical Conferences and C omputers in

Engineering Conference, August 1996; "The identification and use of key

characteristics in the product development process" by Lee et al, Proceedings of

the 1996 ASME Design Engineering Technical Conferences and Computers in

Engineering Conference, August 1996; and "CADET: A software support tool for

constraint processes in embodiment design" by Thornton et al, Research in

Engineering Design, Publisher: Springer-Verlag, 1996.

        Any inquiry concerning this communication or earlier communications from

the examiner should be directed to Linda Krisciunas whose telephone number is

571-272-6931. The examiner can normally be reached on Monday through

Friday, 6:30 am to 3:00 pm.

        If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Tariq Hafiz can be reached on 571-272-6729. The fax

phone number for the organization where this application or proceeding is

assigned is 571-273-8300.

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free). If you would like assistance from a USPTO Customer Service

Representative or access to the automated information system, call 800-786-

9199 (IN USA OR CANADA) or 571-272-1000.

LMK

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